

George Hardy

## **Legal Aspects of Utilizing Geopressured Water as a Source of Energy**

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Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the *Proceedings*.

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## Discussion

**Vanston**

Dean Hardy has informed me that he is going to have to leave later this morning and will not be available for questions during the afternoon session.

If you have questions, we will need to take them up at this period or at the break. We will have a question period at this time.

**Barnea**

**United Nations**

Under the Federal Steam Act, geothermal regulations, hydrocarbons are excluded. I would like to know whether that, in effect, means that the geopressure zones—say offshore or on other federal lands—cannot be considered for exploitation?

**Hardy**

I can't be definitive about that because it is an interpretative problem. The question then is, would geopressure resources, as we have defined them, be unavailable for development? It is the same sort of interpretative problem that I've raised and the federal government is going to have to answer it as to whether the hydrocarbon content, if indeed it exists, is sufficiently strong to be able to classify the resource as a hydrocarbon and, thus, available for development under other statutory regimes as against the problems of whether it might be considered to be geothermal.

Well, I certainly don't think it would fall under the steam-pressure legislation, but it might be a geothermal resource in the sense that it has been used here.

If it is being produced, again, only for the production of methane . . . ? I don't know. I would say that if anybody here can answer that with greater definition, I would be glad to have them do so. Are there any other questions?

**Power**

**University of Texas  
at Austin**

I want to look back in the proceedings of the American Institute of Mining, Metallurgical and Petroleum Engineers, way back to the time when drainage across property lines was a real problem and, also, to the work of Earl Oliver of Ponca City, Oklahoma, and his committee that tried to solve this problem in a manner in which I, in the dim past, I can't quite recall.

I do remember one of the things that the petroleum engineers brought out at that time with respect to private ownership, which you mentioned. That was, if we could prevent fluids, water, oil, gas, from crossing property lines by some engineering method, it might be worth considering.

The rule at that time, I don't believe, was too well carried out. Anyway, here is what it was. If, through a system of pressure control, water-well pressures, you could prevent fluids from moving under a pressure differential, then you might be preserving property rights to ownership in place and preventing drainage in the way of the theory of wild animals. I'll just leave that with you.

**Hardy**

I would say—and I don't want to get into a great public debate, but I would say that that idea is inconsistent with the technical ends of this particular kind of project.

If you stop drainage from crossing the property line, you couldn't produce the resource because you are talking about producing from vast areas.

If you are operating in an open, private-property area, you must by definition—oh, there might be an area on the King Ranch where you could do it—but by definition, you must have the resource cross property lines. I don't think you can avoid it.

**Franke**  
Central Power and Light

What about the problems of the resource when it overlaps into states or into countries?

**Hardy**

Well, that is a neat problem. If it overlaps insofar as the property rights are concerned, the private aspects of it, I would think, could be handled by normal contractual means if you go the traditional oil and gas route where you have to lease everything like that.

The regulatory aspects of it would require, of course, interstate agreements and any compacts of that sort, I would think, would probably require the approval of Congress. That isn't very much fun, but . . . ?

**Franke**

What about in the dealings with Mexico?

**Hardy**

Well, you will have to have treaty arrangements there, and there is not the smoothest relation between Mexico and the United States right now, so that in itself might cause some difficulties.

**Elmer**  
University of Texas  
at Austin

Do you foresee that the proposed system of public ownership of resources would be able to comprehend the other forms of geothermal reservoirs as found in Texas, including the Rio Grande system where it is, as I understand, equivalent to the Imperial Valley system or the hot rocks of far West Texas?

**Hardy**

Yes, you could use the same logical structure if people are willing to accept it. The whole thing depends upon what people are willing to accept.

You can see that this is a unique resource. We have never determined ownership of this resource before, but in the case of hot rocks, that is a little more difficult because you do have the firmly established principle of the common law, where the land owner owns everything above and beneath the surface.

You are able to deal only with oil and gas in those nonownership states that have adopted that concept, or with water in those states that have adopted a nonownership concept, because it does move, it is not in place as in the case of oil and gas.

It does move from one area to another and, therefore, does cross property lines.

The hot-rocks situation seems to me to be one that is not wandering around. It lies beneath the projections of the property lines downward, and I think it fits every land-ownership situation by definition; it would be harder to do [define public ownership of hot rock systems].

**Swanson**  
Southwest Research  
Institute

It seems likely that the first exploitation of this resource will very likely tend to ignore, for a period of time, the thermal aspects of the resource.

In other words, somebody is going to drill a well and start trying to get gas out of it. This will immediately place, it seems to me, the problem within the framework of existing regulations for defining whether this is a gas well or not.

**Hardy**

I don't think there is any question about that, and that's why I think the legislatures and state planners must act not precipitously but quickly.

The question was that the first development seems likely to be for the production of methane, and that presents the nature of the resource in a closer sense in contact with traditional oil and gas doctrines. If you raise the question that way, and if whoever does that, wins the race to the Supreme Court, you are locked in.

Everybody here has different self-interests. Those who are involved, you had better get going if that's where you want it to come out.

**Jones**  
Louisiana State University

That case has already come up in connection with the pumping of water for secondary recovering offshore on the Grand Isle block.

An oil company was pumping water from 9,000 feet for refracturing a deeper oil reservoir and the water well was being pumped at the rate of 900 gallons per minute and was found to yield 400,000 standard cubic feet of gas per day.

This is quite a bit of gas. This was being recovered on the platform. The company asked Don Solonos, the Administrator in the New Orleans office, for a ruling on whether this was a gas well or a water well and what to do about the gas.

They were willing to pay the royalty on the gas. The ruling was that this was a water well. This is simply a ruling by an administrator in an office of the conservation division, but it is interesting that his reaction was that there would be no gas if you weren't pumping water and therefore, it is not a gas well.

**Hardy**

Well, that's interesting logic, isn't it? It is going to take that kind of logic to reclassify it.

**Garrity**  
U.S. Department of Interior

I am with the Solicitors Office. I don't have a question as much as an invitation. I am here because the Department of the Interior is trying to figure out what, if anything, we should be doing to take care of this new type of resource. There are a lot of the problems with the present Geothermal Steam Act, the Outer Continental Shelf Leasing Act, and even the Helium Act.

I would suggest that anyone who has any kind of recommendation, that you address it to the Solicitor's Office of the Department of Interior in Washington.

We are now presently considering just what we are going to do. Unfortunately, we are not in a completely virgin area. There have been quite a few decisions made having to do with geothermal and associated resources.

Unfortunately, we are starting off on the same bad road that you were talking about in oil and gas and water. For example, the Solicitor's Office of the Department of the Interior has issued two opinions to the effect that the surface owner owns the geothermal resource. In other words, the absolute ownership theory. I had a federal judge tell me that Solicitor's Office opinions ranked with "Dear Abby." Unless we get something from "Dear Abby," we are stuck with this. I also wanted to mention that several of the states have already taken a shot at some of these problems. New Mexico has just passed an Anti-generation Tax.

**Hardy**

Idaho, a number of years ago, appropriated its geothermal resources, and it does hold them publicly.

**Dorfman**

Dean Hardy, I know you have given this a great deal of thought. On the question of unique resource, how would you define the resource in order to so classify it?

**Hardy**

I would ask an engineer. No, being serious, this is the interrelationship between the lawyer and the engineer. You go to the engineer and you say, "I want you to describe this resource in terms that suit you," and work with him on that.

I think that there has to be a cooperative effort between the technical people and the lawyers drafting the statute. I wouldn't undertake it without sitting down with an engineer for quite some time.

**Meyer**  
General Electric  
Company-Tempo

You mentioned, I believe, that you preferred to avoid the environmental questions so perhaps you would rather not deal with this, but what about subsidence on these large tracts?

**Hardy**

Well, subsidence is likely to be a problem. I meant to mention that—pardon me for not having done so, but all I intended to do was mention it.

My understanding is that if you have these very large areas of production, you are going to have a sinking of a very large area simultaneously and, if everything goes at once, you may not have too much of a problem.

The problems will occur where you have a differential in the rate of subsidence or subsidence at one point, maybe, because of a fault and not subsidence on the other side; damage to sewer lines, damage to buildings are all possibilities.

I suspect that if that arises, you are going to have to suffer the liability that is involved there—and certainly under civil law doctrines, you are going to be liable. I would think that is the way it would be unless you have some legislation that gives relief of some form.

**Meyer**

Does ownership versus nonownership have any bearing?

**Hardy**

No, because the right of one piece of land to support, for its buildings or something like that, is indiginous to the ownership of the land. It has nothing to do with the theories applicable to the minerals.

**Bonnecarrere**  
State of Louisiana

George, this may be too specific, but you raised a point earlier in your talk concerning the business of preemptive use versus actual use.

What I was interested in was the fact that though I may not have been using the resource, if I have preemptively covered myself in a lease agreement or something like that, how strong is this present use versus the preemptive use?

**Hardy**

The question deals with the situation of, if you adopt the system of prior appropriated rights, how do you define previously vested rights.

I can read to you the South Dakota definition as to water, and that will give you some indication of what they did, and it was upheld.

Vested rights: beneficial use of ground water and diversions and application of water prior to the passage of this chapter.

The right to take and use water for beneficial purposes where an owner or lawful agent is engaged in the construction of works for the actual application of water to a beneficial use at the time of the passage of this chapter provided such work shall be completed and water is actually applied for such use within a reasonable time thereafter.

Now, the situation might not be the same where you have leasing activity for geothermal development because you do have contracts there. Except—if that state then says, and it is upheld, that you don't own this, we own it and it can be extracted only under regulations issued by the state, then they [the lessee] contracted to something that the land owner didn't have a right to do. It's just money badly spent. That might not be the way it comes out, but it is a possibility that you have just spent bad money.

On the other hand, a landowner or his lessee could erect a logical structure and say that such legislation would interfere with vested contractual rights. The answer that might be given to that is that you have no right to do what you contracted about. Thank you.